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trunk of the tree that, aided by its color, which so closely assimilates it to the bark of hard-wood trees, it is difficult for an unpracticed eye to detect it. The chipmunk has the same habit in a less degree.

THE ENGLISH SPARROW "PLAYING 'POSSUM."—In the same note Mr. Fish relates the following case: "Among the birds, only the English sparrow have I known to make use of this subterfuge. One morning I saw four or five of these little pugilists engaged in a terrific fight among themselves. They had pecked and hammered one another in the slushy snow, and appeared reckless of surroundings. I stepped up quietly and with a quick movement caught one of them before he could rise to fly. He immediately put on the appearance of death and lay in my hand on his side, motionless and, as I supposed, lifeless. I smoothed his soiled plumage and stretched out his wings to examine the quills, feeling pity for the little fellow's untimely 'taking off,' killed in a brawl. I had gone a block to Pearl street, in which were large elms, when all at once, as if by magic, the little rascal straightened up and, like a flash, darted out of my hand and flew to the top of one of the highest trees, where he trimmed his disheveled feathers and regarded me with a quizzical look, seemingly well satisfied with the trick he had played me."

SENSE OF DIRECTION IN ANIMALS.—The remarkable faculty which cats, dogs, pigeons and other animals possess of returning in a straight line to a point of departure, has awakened much curiosity on the part of naturalists. Some refer it to instinct, some to intelligence similar to that of man, some to an internal mechanism which makes the animals simply automata; but none of these attempted explanations do anything towards solving the mystery. Wallace supposed that when an animal is carried to a great distance in a basket, its fright makes it very attentive to the different odors it encounters on the way, and that the return of these odors, in inverse order, furnishes the needful guide. Toussenet supposes that birds recognize the north as the cold quarter, the south as the warm, the east (in France), as the dry, and the west as the moist. Viguiet, in the *Revue Philosophique*, publishes an original memoir upon the sense of orientation and its organs, in which he attributes the faculty to a perception of magnetic currents.—*Journ. Roy. Microscopical Society*.

ANTHROPOLOGY.¹

ANTHROPOLOGY AT THE AMERICAN ASSOCIATION.—The Section of Anthropology was organized with Professor Otis T. Mason, vice-president, in the chair, and Professor George H. Perkins, of Vermont, as secretary. The vice-presidential address on the

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Scope and value of Anthropological Studies has appeared in full in *Science*.

The papers read were as follows :

1. Archæological Explorations in the Ohio valley. Altar mounds and their contents. By Professor F. W. Putnam.
2. Indoor games of the Japanese. By Professor E. S. Morse.
3. The great mound of Cahokia. By Wm. McAdams.
4. Life among the Mohawks in the Catholic missions of Quebec province. By Mrs. Erminnie A. Smith.
5. Metrical standard of the Mound-builders—by the method of even divisors. By Charles Whittlesey.
6. The Mound-builders identified. By Professor John Campbell.
7. An abnormal human skull from a stone grave in Tennessee. By Professor F. W. Putnam.
8. Typical shapes among the Emblematical mounds. The different attitudes exhibited by the same animal. By S. D. Peet.
9. Personal observations of the Missouri river mounds from Omaha to St. Louis ; considered from a geological standpoint. Their invariable association with the Loess and Terrace formation. By E. P. West.
10. Osage war customs. By J. O. Dorsey.
11. Some observations on the laws and privileges of the Gens in Indian society. By Miss A. C. Fletcher.
12. An ancient village of the emblematic Mound-builders. Caches guarded by effigies. Effigies guarding the village and sacrificial places not far away. By S. D. Peet.
13. A new stand for mounting skulls. By E. E. Chick.
14. Symbolic earth formation. By Miss A. C. Fletcher.
15. The correspondence between the prehistoric map of North America and the system of social development. By S. D. Peet.
16. The Charnay collection at Washington. By O. T. Mason.
17. Kitchens of the East. By E. S. Morse.
18. Methods of arrow release. By E. S. Morse.
19. Game drives among the Emblematic mounds. By S. D. Peet.
20. Vestiges of glacial man in Central Minnesota. By Miss F. E. Babbitt.
21. High places connected with ancient villages ; the religious structures common to villages in prehistoric time. By S. D. Peet.
22. A classification of the Sciences. By J. W. Powell.

Taking the papers in their order, a very brief abstract is given below, so that any of our readers may follow up a subject of special interest by correspondence with the author.

1. Mr. Putnam's paper was an evening lecture, illustrated with drawings and lantern views, delivered in one of the largest churches of Minneapolis, to a crowded and attentive audience. The subject was the account of explorations among a group of mounds near Madisonville, Ohio, in company with Dr. C. S. Metz. The elaborate construction, the varied and valuable contents, and the distinctive features of these mounds made them objects of exceeding interest. A full report will be given in a forthcoming publication of the Peabody Museum.

2, 17, 18. Professor E. S. Morse, of Salem, Mass., read three instructive papers upon his experiences in Japan and other lands

of the Orient. The sports and pastimes of the Japanese, for children as well as for adults, resemble ours in many respects, but there are many that are different. Those which resemble are much more difficult than ours, calling for much more time and patience. The evolution of the kitchen from two or three stones beneath a rude pot was well shown from the author's experiences. The most interesting of Mr. Morse's papers was a monograph on arrow release throughout the world, in past as well as in recent times. The paper was well illustrated. The author would be thankful for references to arrow release in either ancient or modern times.

3. Mr. McAdams, who lives at Alton, Illinois, gave his personal observations on the Cahokia mound and its gigantic neighbors. This is doubtless the finest group of terrace mounds in the United States.

4. Mrs. Erminnie A. Smith, under the direction of Major J. W. Powell, has devoted several years to the Iroquois tribes. The last season was spent among the remnants of the Mohawks at their villages in Quebec province, where she has collected quite extensive vocabularies.

5. Colonel Whittlesey reviewed with caution the various methods of arriving at a metric standard among the Mound-builders. The works of Mr. McGee and W. Flinders Petrie were especially considered.

6. Professor Campbell brings to the identification of the Mound builders the latest investigations of European scholars in the very early Mesopotamian civilization; looking to an early Hittite migration to solve the problem.

7. Among the unique objects found by Mr. Putnam in his Madisonville mounds was a skull exhibiting some curious marks, the most notable being an excess of wormian bones and an extra parietal suture.

8, 12, 15, 21. The Rev. S. D. Peet, of Clinton, Wisconsin, editor of the *American Antiquarian*, took the occasion of the proximity of the association to the effigy mounds of Wisconsin, to discuss these interesting objects in a series of papers. A long acquaintance with the effigies enabled the speaker to bring out much new information. He showed that many enigmatical shapes were merely different attitudes of the same animal, that the effigies were always near some cache, village, buffalo or deer ford and altar mounds, in short that their function was connected in some way with daily life and worship. Dr. Peet also drew attention to the geography of our country with the phases of aboriginal culture.

9. Judge West, after sailing down the Missouri river from Omaha to St. Louis, and carefully inspecting the mounds on the shore, comes to the conclusion that they are all older than the latest river gravel formation.

10. In a minute and careful manner, assisted by diagrams, Mr. Dorsey described, from personal observation, the shape and arrangement of the Osage camp, and the intricate system of vigils, discussions, and dances preparatory to a war, a foray, or a horse-stealing expedition. This paper will be published in full by Major Powell in the Contributions to North American Ethnology.

11, 14. Miss Fletcher has been spending two years among the Indians, living in their camps, and her experiences are of the most absorbing interest.

13. Mr. Chick's apparatus for mounting delicate crania was exhibited and explained by Mr. Putnam.

16. The Charnay collection is pretty well understood from notices in *Science*, the *Century Magazine* and the AMERICAN NATURALIST.

20. Miss F. E. Babbitt exhibited a series of rude palæolithic implements of milky quartz, found in the modified drift of the Mississippi river above Minneapolis, fifteen feet beneath the surface. Quite a discussion was evoked by these rivals of the finds in the Trenton gravels.

22. The classification of Major Powell was general as regards science at large and elaborated only in the field of anthropology. The author discarded all merely biological studies, and viewed as anthropological *par excellence* only psychology, language, arts, sociology and mythology.

The meetings of this section were generally well attended, and the discussions showed that the audience were in perfect sympathy with the speakers. At the next meeting Professor E. S. Morse will preside, and Mr. Wm. H. Holmes will act as secretary.

WISCONSIN HISTORICAL COLLECTIONS.—The ninth volume of this excellent series covers the years 1880, 1881, 1882. The editor, Mr. Lyman C. Draper, has brought together much that is interesting in the early history of the State, and the following papers on archæology and ethnology :

1. Emblematic mounds in Wisconsin. By the Rev. S. D. Peet.
2. A mound near Boscobel. By the Hon. C. K. Dean.
3. Early historic Relics of the Northwest. By Professor J. D. Butler.
4. Indian customs and early recollections. By Mrs. H. S. Baird.

The first paper begins with the history of exploration among the effigy mounds, and gives many valuable bibliographic references. The author then summarizes his own studies respecting them. It is a remarkable fact that the large majority of these works were situated on the natural lines of travel and at those prominent places which first attracted the attention of settlers. The significance of the mounds is not discussed in the paper, the author's design being to describe them and to fix on paper those

shapes which are rapidly vanishing from the soil. The difficulty of making out the shape is very great, owing to the action of the elements and the hand of civilization. The figures are thus divided: First, those representing inanimate objects, such as weapons, badges and various emblems which are familiar to the native races; second, animal effigies as such, using the word animal in the sense of four-footed beasts, and all creatures inhabiting the water or land belonging to the order of Mammalia; third, the effigies of birds and winged creatures. Another division might also be added, and made to include fishes, reptiles and such creatures as have neither wings nor legs. Then follows a detailed enumeration of the forms in these classes. Mr. Peet has an original way of mixing up his figures, being almost as bewildering as some of the effigy mounds; they run Fig. 5, 1, 2, 3, 4, 6, 7, 8, 9, 24, 25, 10, 13, 11, 12, 14, 18, 16, 17, 15, 19, 20, 21, 22, 23, 30, 26, 27, 28, 29.

Professor Butler describes a visit to Aztalan, and speculates upon the method in which the bricks there found were burned. His account of the copper implements in the State Historical Society's Museum is valuable. The professor is quite a wag in his way, and is unable to repress himself even in serious company.

IRON FROM OHIO MOUNDS.—In the Proceedings of the American Antiquarian Society, Vol. II, 1883, p. 349, Professor F. W. Putnam reviews the statements of the old writers respecting metal found in the Western mounds. Mr. Atwater's iron-bladed sword, or dagger with a steel blade, is traced to that gentleman's imagination. Mr. Hildreth's silver-plated copper ornaments are thus characterized: "A careful study of the Hildreth specimens and also of the silver and iron-covered specimens in the Peabody Museum, has shown conclusively that the plating was done simply by covering the outer surfaces of the objects with thin sheets of the overlaid metal, which were closely united to the copper by pounding and rubbing, and by turning the edges over and under the slightly concave edge of the copper foundation. This method was followed in all the objects from the mounds and stone graves, where thin layers of native copper, silver or iron have been used to cover beads and disks of wood." The so-called spools of copper are now believed to have been ear ornaments, Professor Putnam having found fragments of the "Man with a broken ear." The method of producing these curious objects has been carefully studied out by the author. The next idol to be upset is Dr. Hildreth's "plate of silver, which appears to have been the upper part of a sword scabbard." This is shown to be identical with ornaments found by Professor Putnam in Tennessee mounds. The author also speaks of a similar one made of meteoric iron found in a mass of materials from the altar of a mound in the Little Miami valley, and made by hammering a mass of meteoric iron in the same way that masses of silver and copper were man-

ipulated. Professor Putnam, while correcting the misconceptions of early writers, pays a just tribute to their zeal, and rejoices that we are now able to see with clearer eyes than those who lived in the days when nearly every fact observed was thought worthless unless it could be immediately accounted for, and the unknown became intelligible by the application of the power of the imagination.

HUMAN PROPORTION.—Dr. Robert Fletcher delivered a lecture in the National Museum, last spring, on Human Proportion in Art and Anthropometry, which is published by Moses King, of Cambridge, Mass. This lecture was an outline of the various schemes of human proportion devised by artists and anatomists, with some account of the process by actual measurement which is now carried on under the name of anthropometry. The cubit or forearm (whence ell, from *ulna*) is the most ancient measure known. The foot was first employed as a measure in Greece. Other bodily measures came subsequently into use, such as the span, pace, yard (Saxon *gyrdan*, to girdle), fathom (Saxon *fadhm*, to embrace). From the earliest periods sculptors, painters, anatomists and geometers have exerted surprising ingenuity in devising schemes of human proportion, and to these schemes we are indebted for the preservation of ethnic characteristics. Dr. Fletcher has collected the literature of these systems, and the lecture was illustrated by diagrams showing the various geometric processes followed, in all of which there is supposed to be some occult relation to all dimensions of the body, of some one special part, or that, given the dimensions of a part, the remaining dimensions could all be deduced from a geometric diagram. Now anthropometry measures the living individuals by the scores, the hundreds, the thousands, and from an immense mass of measurements obtains the mean. Art and anthropometry, therefore, are to some extent antagonistic. Art seeks for the beautiful and idealizes; anthropometry seeks for the real and measures. Dr. Fletcher has added to his very interesting lecture five pages of bibliography, and refers to page 441 of the first volume of the Index Catalogue of the Library of the Surgeon General's office for a copious bibliography of anthropometry.

MICROSCOPY.¹

TREATMENT OF PELAGIC FISH EGGS.—The transparent eggs of various Teleostei found floating on the surface of the sea present unusual difficulties in the way of hardening. I have had recourse to all the fluids commonly used for this purpose, and have failed to find any satisfactory method of hardening the yolk. Even the germinal disk cannot be well preserved by any of the ordinary hardening agents. Kleinenberg's picro-sulphuric acid, for in-

¹ Edited by Dr. C. O. WHITMAN, Newton Highlands, Mass.